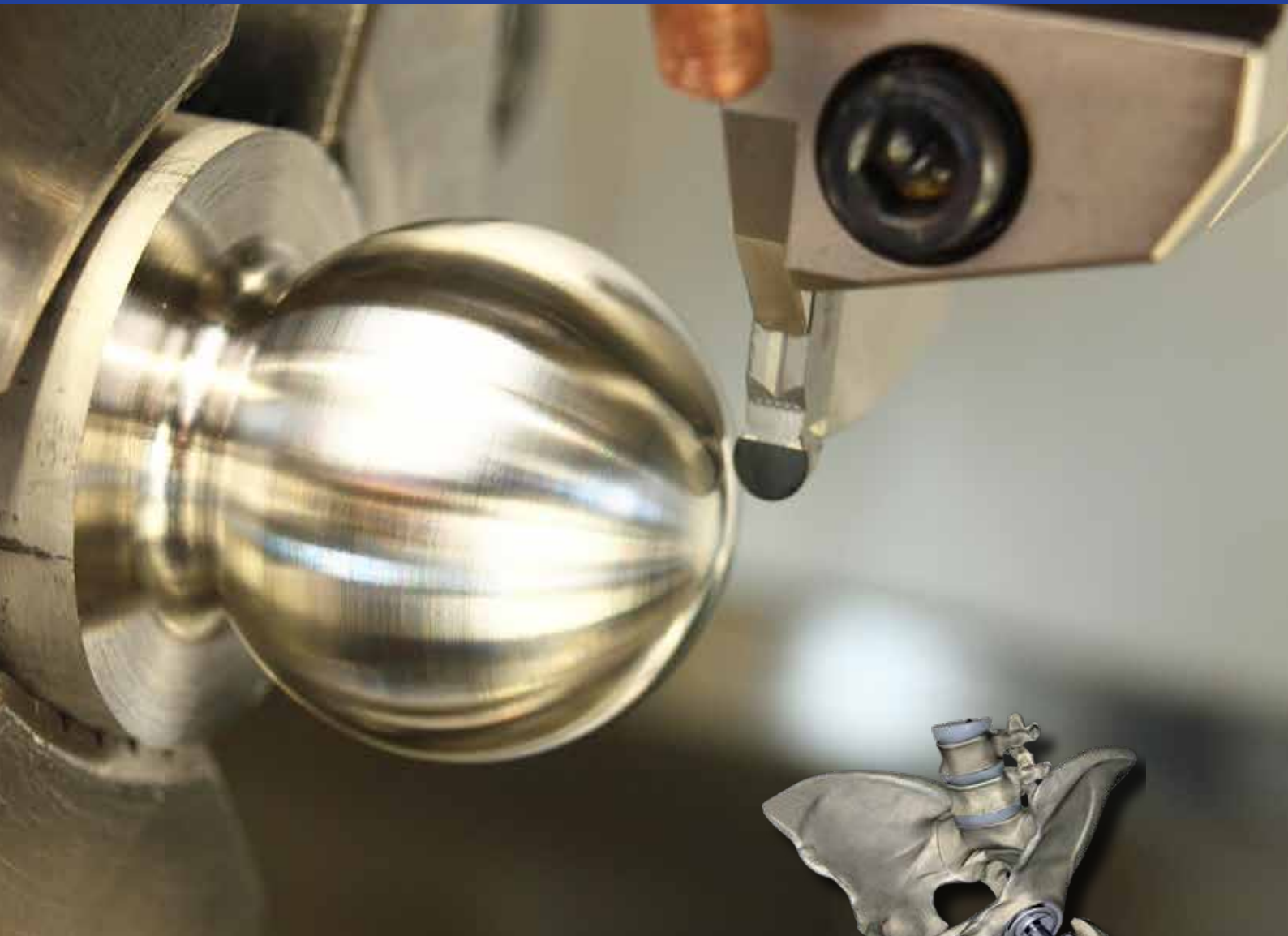


SUMIBORON CBN Inserts for Medical

for Finish Turning of Titanium and Co-Cr Alloys



- Excellent surface quality
- Stable and long tool life
- Suitable for hip-joints, knee-joints and screws

SUMIBORON Binderless CBN CBN Inserts for Medical

■ Features

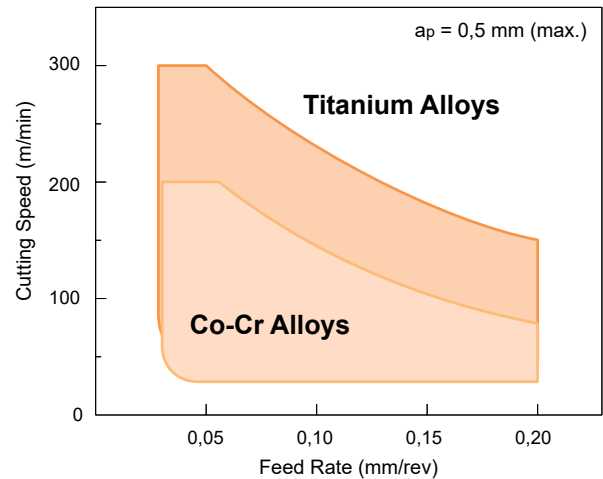
Excellent Surface Quality


With CBN grains which are combined strongly each other, the cutting edge is kept sharp in long cutting time. As a result the machining accuracy and surface quality are kept in excellent level.

High Productivity and Long Tool Life

With excellent hardness and thermal conductivity, high speed machining of Titanium and Co-Cr alloys are available with overwhelming longer tool life than current carbide tools.

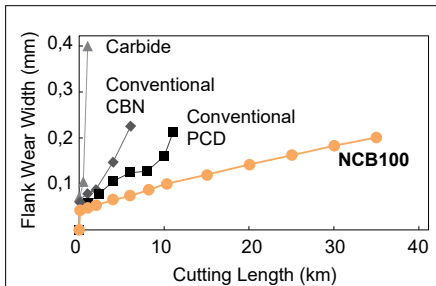
■ Application Range



Work Material	Grade	Binder	CBN Content (%)	Grain Size (µm)	Hardness HV (GPa)	TRS (Gpa)	Features
 Titanium Co-Cr	NCB100	–	100	<0,5	51 – 54	1,8 – 1,9	Ultimate CBN sintered body which does not contain any binder materials, nano-submicron CBN particles are bonded directly and strongly.
	BN7500	Co Compound	90 – 95	1	41 – 44	2,0 – 2,1	CBN sintered body with high content fine CBN grains, enable high productivity and excellent surface finish and cost effective.

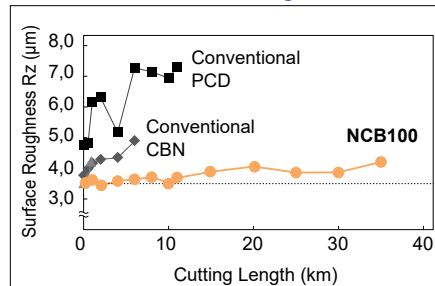
■ Cutting Performance (Machining of Titanium Alloy)

Wear Resistance

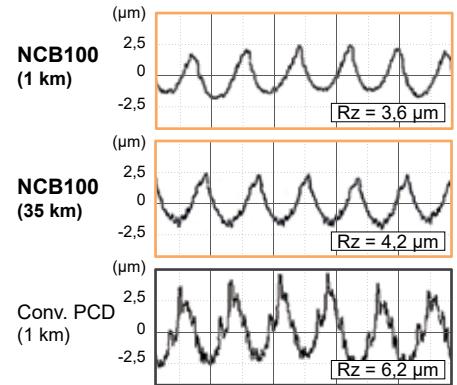


Work Material: Titanium Alloy (Ti-6Al-4V)
 Insert: CNGA 120408 NU
 Cutting Conditions: $v_c = 150$ m/min, $f = 0,15$ mm/rev, $a_p = 0,5$ mm, wet

Machined Surface Roughness

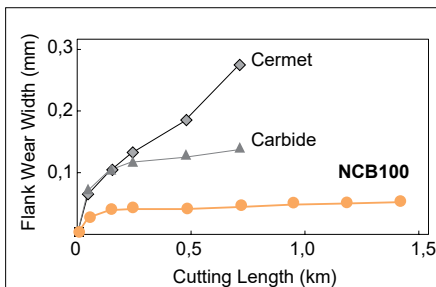


Work Material: Titanium Alloy (Ti-6Al-4V)
 Insert: CNGA 120408 NU
 Cutting Conditions: $v_c = 150$ m/min, $f = 0,15$ mm/rev, $a_p = 0,5$ mm, wet



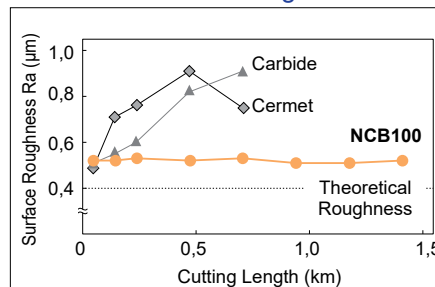
■ Cutting Performance (Machining of Cobalt-Chrome Alloy)

Wear Resistance

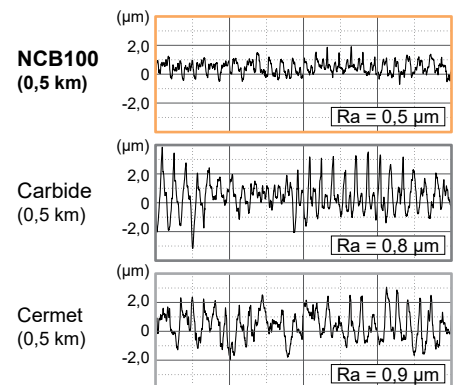


Work Material: Co-Cr
 Insert: CNGA 120408 NU
 Cutting Conditions: $v_c = 60$ m/min, $f = 0,1$ mm/rev, $a_p = 0,4$ mm, wet

Machined Surface Roughness



Work Material: Co-Cr
 Insert: CNGA 120408 NU
 Cutting Conditions: $v_c = 60$ m/min, $f = 0,1$ mm/rev, $a_p = 0,4$ mm, wet



SUMIBORON Binderless CBN

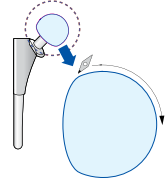
CBN Inserts for Medical

Application Examples

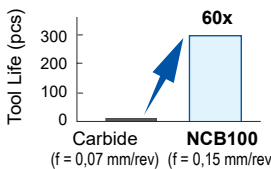
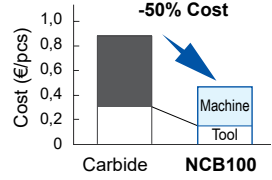
Co-Cr Alloy, Hip-Joint-Head

Much longer tool life in double efficiency than carbide.

→ Total cost reduction



Appearance, Roughness

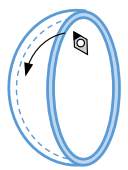



Insert: VNGA 160408 NU NCB100
Cutting Conditions: $v_c = 65$ m/min, $f = 0,15$ mm/rev, $a_p = 0,2$ mm, wet

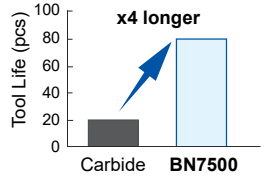
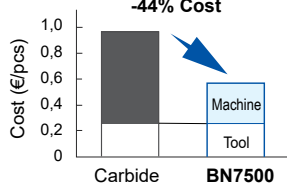
Ti-6Al-4V, Hip-Joint Cup

Excellent surface quality even in high speed finishing.

→ Total cost reduction



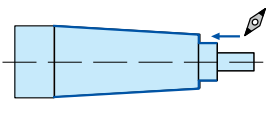
Dimension

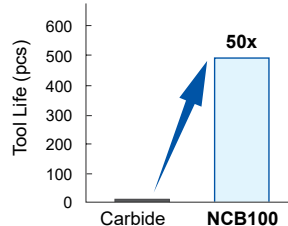
Insert: DCGW 070204 NU2 BN7500
Cutting Conditions: $v_c = 150$ m/min, $f = 0,12$ mm/rev, $a_p = 0,2$ mm, wet

Co-Cr Alloy, Dental Implant, OD/Face Finishing

Binderless PCBN NCB100 realized excellent surface finish and achieved much longer tool life than carbide.



Surface Roughness


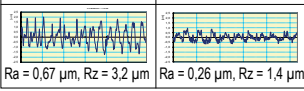


Insert: VCGW 110301 NU NCB100
Cutting Conditions: $v_c = 50$ m/min, $f = 0,01$ mm/rev, $a_p = 0,1$ mm, oil

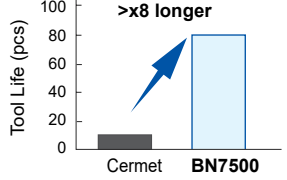
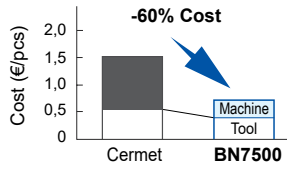
Co-Cr Alloy, Hip-Joint-Head

BN7500 achieved better quality, double productivity and longer tool life as a result 60% cost saving.

Conventional Cermet VNMG 160408 ($v_c = 40$, $f = 0,08$)	BN7500 GCMN 4020 P ($v_c = 100$, $f = 0,12$)
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$R_a = 0,67 \mu\text{m}$, $R_z = 3,2 \mu\text{m}$ $R_a = 0,26 \mu\text{m}$, $R_z = 1,4 \mu\text{m}$

Inserts and Cutting Conditions:
Convent. Cermet: VNMG 160408, $v_c = 40$ m/min, $f = 0,08$ mm/rev
BN7500: GCMN 4020 P, $v_c = 100$ m/min, $f = 0,12$ mm/rev



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